

Re-run

#5



PCT

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/868,604

DATE: 05/08/2002

TIME: 11:02:14

Input Set : N:\paola\US09868604.raw

Output Set: N:\CRF3\05082002\I868604.raw

1 <110> APPLICANT: Alex Bollen  
 2 Alain Fauconnier  
 3 Edmond Godfroid  
 4 <120> TITLE OF INVENTION: Vaccine  
 5 <130> FILE REFERENCE: B45168  
 6 <140> CURRENT APPLICATION NUMBER: US/09/868,604  
 7 <141> CURRENT FILING DATE: 2001-06-20  
 8 <160> NUMBER OF SEQ ID NOS: 82  
 9 <170> SOFTWARE: FastSEQ for Windows Version 3.0  
 11 <210> SEQ ID NO: 1  
 12 <211> LENGTH: 2100  
 13 <212> TYPE: DNA  
 14 <213> ORGANISM: Bordetella pertussis  
 15 <220> FEATURE:  
 16 <221> NAME/KEY: CDS  
 17 <222> LOCATION: (1)...(2100)  
 18 <400> SEQUENCE: 1

ENTERED

19	atg acg agc aag aaa tcc att cgc cgc ctg caa cgc gcg gtg gcg ctg	48
20	Met Thr Ser Lys Lys Ser Ile Arg Arg Leu Gln Arg Ala Val Ala Leu	
21	1 5 10 15	
22	gcc acc agc cgc aac gac atc gta ctg gcc gtg ctc atc gtg gcg atc	96
23	Ala Thr Ser Arg Asn Asp Ile Val Leu Ala Val Leu Ile Val Ala Ile	
24	20 25 30	
25	gtc ttc atg atg atc ctg ccg ttg ccc aca acg ctg gtc gac gtg ctg	144
26	Val Phe Met Met Ile Leu Pro Leu Pro Thr Thr Leu Val Asp Val Leu	
27	35 40 45	
28	atc ggt gcg aac atg acg ctg tcg gca gtc ctg ctg atg gtc gcg atg	192
29	Ile Gly Ala Asn Met Thr Leu Ser Ala Val Leu Leu Met Val Ala Met	
30	50 55 60	
31	tac ctg cct tcg ccc ctg gcg ttt tcc tcg ttc cct tcg gtc ctg ctg	240
32	Tyr Leu Pro Ser Pro Leu Ala Phe Ser Ser Phe Pro Ser Val Leu Leu	
33	65 70 75 80	
34	gtc acc acg ctg ttc cgg ctg ggc atc tcc atc gcg acc acg cgg ctg	288
35	Val Thr Thr Leu Phe Arg Leu Gly Ile Ser Ile Ala Thr Thr Arg Leu	
36	85 90 95	
37	atc ctg ctg caa ggc gat gcc ggc cac atc gag acc ttc ggc aac	336
38	Ile Leu Leu Gln Gly Asp Ala Gly His Ile Ile Glu Thr Phe Gly Asn	
39	100 105 110	
40	ttc gtg gtg ggc ggc aac ctg atc gtc ggc ctg gtg gtt ttc ctc atc	384
41	Phe Val Val Gly Gly Asn Leu Ile Val Gly Leu Val Val Phe Leu Ile	
42	115 120 125	
43	ctc acg atc gtg cag ttc gtg gtc atc acc aaa ggc gcg gag cgg gtg	432
44	Leu Thr Ile Val Gln Phe Val Val Ile Thr Lys Gly Ala Glu Arg Val	

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45	130	135	140	
46	gcc gaa gtc gcc gcg cgc ttc tcg ctg gac gcc atg ccc ggc aag cag	480		
47	Ala Glu Val Ala Ala Arg Phe Ser Leu Asp Ala Met Pro Gly Lys Gln			
48	145 150 155 160			
49	atg tcc atc gac gcg gac ttg cgc gcg ggc acc ata gac atg gac gaa	528		
50	Met Ser Ile Asp Ala Asp Leu Arg Ala Gly Thr Ile Asp Met Asp Glu			
51	165 170 175			
52	gcc cga cgc cga cgc cgt acg gtc gag aag gaa agc caa ctg tat ggc	576		
53	Ala Arg Arg Arg Arg Thr Val Glu Lys Glu Ser Gln Leu Tyr Gly			
54	180 185 190			
55	gcc atg gac ggc gcg atg aag ttc gtc aag ggc gat gcc atc gcc ggc	624		
56	Ala Met Asp Gly Ala Met Lys Phe Val Lys Gly Asp Ala Ile Ala Gly			
57	195 200 205			
58	ctg atc atc gtt gcc gtc aac ctg ctt ggc ggc atg ctg gtc ggc gtg	672		
59	Leu Ile Ile Val Ala Val Asn Leu Leu Gly Gly Met Leu Val Gly Val			
60	210 215 220			
61	ctg cag cgc ggc ctg agc gcc ggc gag gcc gtg cag aca tat gcc atc	720		
62	Leu Gln Arg Gly Leu Ser Ala Gly Glu Ala Val Gln Thr Tyr Ala Ile			
63	225 230 235 240			
64	ctg acc ata ggc gac ggg ctc atc gcg cag atc ccg gcg ctg ttc atc	768		
65	Leu Thr Ile Gly Asp Gly Leu Ile Ala Gln Ile Pro Ala Leu Phe Ile			
66	245 250 255			
67	gcc atc tgc gcc gga atc atc gtg acg cgg gtg cag acc ggg gat ggc	816		
68	Ala Ile Cys Ala Gly Ile Ile Val Thr Arg Val Gln Thr Gly Asp Gly			
69	260 265 270			
70	ccc tcc aac gta ggc acc gac atc ggc gca caa gtg ctg gcg cag cct	864		
71	Pro Ser Asn Val Gly Thr Asp Ile Gly Ala Gln Val Leu Ala Gln Pro			
72	275 280 285			
73	cgc gcc ctg gtc att gcc ggc gcg atc tcg gca ggc ctg ggc ctc att	912		
74	Arg Ala Leu Val Ile Ala Gly Ala Ile Ser Ala Gly Leu Gly Leu Ile			
75	290 295 300			
76	ccc ggc atg ccc acg ctg gtc ttc ttc gcc ctg gcc gcc gcg gtg ggc	960		
77	Pro Gly Met Pro Thr Leu Val Phe Phe Ala Leu Ala Ala Val Gly			
78	305 310 315 320			
79	acc atc ggt ttc gta ctg ctg cgc gca tcc cag cgt ccg ccc gaa ggc	1008		
80	Thr Ile Gly Phe Val Leu Leu Arg Ala Ser Gln Arg Pro Pro Glu Gly			
81	325 330 335			
82	gcc gag ccc gcg ctc gcc ggc atg gct gcc gac ggc cag ccc cgc acc	1056		
83	Ala Glu Pro Ala Leu Ala Gly Met ala Ala Asp Gly Gln Pro Arg Thr			
84	340 345 350			
85	cgc gcg ccg gcg gat ggg cag gcg gaa ttc gcc ccc acc gtc ccg ctg	1104		
86	Arg Ala Pro Ala Asp Gly Gln Ala Glu Phe Ala Pro Thr Val Pro Leu			
87	355 360 365			
88	atc atc gac gta gcc gcg cgg ctg cag ccc cgg ttc gag ccg gcc acc	1152		
89	Ile Ile Asp Val Ala Ala Arg Leu Gln Pro Arg Phe Glu Pro Ala Thr			
90	370 375 380			
91	ctc acc gac gat ctg ctg cag atc cgg cgg gcg ctc tat ttc gac ctg	1200		
92	Leu Thr Asp Asp Leu Leu Gln Ile Arg Arg Ala Leu Tyr Phe Asp Leu			
93	385 390 395 400			

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94	ggc gtg ccg ttt ccc ggc atc cag ttg cgc ttc acc gaa gcg ctg gcc	1248
95	Gly Val Pro Phe Pro Gly Ile Gln Leu Arg Phe Thr Glu Ala Leu Ala	
96	405 410 415	
97	gcc aat acc tac acc atc gtg ctg tcg gag atc ccg gtg gcg caa gga	1296
98	Ala Asn Thr Tyr Thr Ile Val Leu Ser Glu Ile Pro Val Ala Gln Gly	
99	420 425 430	
100	atg ttg cgc gac gat gcc gtg ctg gtg cgg gac acc gag cag aac ctg	1344
101	Met Leu Arg Asp Asp Ala Val Leu Val Arg Asp Thr Glu Gln Asn Leu	
102	435 440 445	
103	cag gcc ctg cgg atc gca tac gaa acg ggc gcg gcc ttt ctg ccc gat	1392
104	Gln Ala Leu Arg Ile Ala Tyr Glu Thr Gly Ala Ala Phe Leu Pro Asp	
105	450 455 460	
106	acg ccc acg atc tgg gtt gcg gcc agt ctg acc ggc gcc ttg cgc gat	1440
107	Thr Pro Thr Ile Trp Val Ala Ala Ser Leu Thr Gly Ala Leu Arg Asp	
108	465 470 475 480	
109	gca ggt att cct tac ctg ggt atc agc cag atc ctg act tgg cac ttg	1488
110	Ala Gly Ile Pro Tyr Leu Gly Ile Ser Gln Ile Leu Thr Trp His Leu	
111	485 490 495	
112	gca tat gta ttg aaa aaa tat tca gcc gat ttc atc ggc atc cag gaa	1536
113	Ala Tyr Val Leu Lys Lys Tyr Ser Ala Asp Phe Ile Gly Ile Gln Glu	
114	500 505 510	
115	acc cgg ttt ctg ctt tcg gcc atg gaa gaa cga ttt ccc gat ctg gtc	1584
116	Thr Arg Phe Leu Leu Ser Ala Met Glu Glu Arg Phe Pro Asp Leu Val	
117	515 520 525	
118	aag gag tgc ctg cgc gtc atg ccg gtg cag aag att gcc gaa atc ctg	1632
119	Lys Glu Cys Leu Arg Val Met Pro Val Gln Lys Ile Ala Glu Ile Leu	
120	530 535 540	
121	cag cgc ctt gtt tcc gaa gaa gtg tcg ata cgc aac ctg cgc gcc gtc	1680
122	Gln Arg Leu Val Ser Glu Glu Val Ser Ile Arg Asn Leu Arg Ala Val	
123	545 550 555 560	
124	ctg gaa gcg ctg gtc gaa tgg ggc cag aag gaa aag gat acc gtc ctg	1728
125	Leu Glu Ala Leu Val Glu Trp Gly Gln Lys Glu Lys Asp Thr Val Leu	
126	565 570 575	
127	ctt acg gag tat gtc cga atc gca ctc aag cgc tat atc agc cac aag	1776
128	Leu Thr Glu Tyr Val Arg Ile Ala Leu Lys Arg Tyr Ile Ser His Lys	
129	580 585 590	
130	tac acc agc ggc cac aat atc ctg ccc gcc tac ctg ctg gcc ccc aag	1824
131	Tyr Thr Ser Gly His Asn Ile Leu Pro Ala Tyr Leu Leu Ala Pro Lys	
132	595 600 605	
133	gtc gag gaa acc gtg cgc gcc gcc atc cgg cag acc gcc gcc ggc agt	1872
134	Val Glu Glu Thr Val Arg Ala Ala Ile Arg Gln Thr Ala Ala Gly Ser	
135	610 615 620	
136	tat ctc gcc ctc gat ccg gac acg aca cgc cga ctg gtc gag cac atc	1920
137	Tyr Leu Ala Leu Asp Pro Asp Thr Thr Arg Arg Leu Val Glu His Ile	
138	625 630 635 640	
139	cgt caa tgt gtc ggc gat ctg gcc gcc ggc gcg agc cgt ccc gtc ttg	1968
140	Arg Gln Cys Val Gly Asp Leu Ala Ala Gly Ala Ser Arg Pro Val Leu	
141	645 650 655	
142	ctg acg tcg atg gac atc cgg cgc tac acg cgc aag atg ata gaa gcc	2016

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143      Leu Thr Ser Met Asp Ile Arg Arg Tyr Thr Arg Lys Met Ile Glu Ala
144                660                665                670
145      gat ctc tac gcc ctg ccg gtg ctg tcc tac cag gaa ctg acg ccg gag      2064
146      Asp Leu Tyr Ala Leu Pro Val Leu Ser Tyr Gln Glu Leu Thr Pro Glu
147                675                680                685
148      atc aat gta cag ccc ctg ggc agg gtg gat cta tga      2100
149      Ile Asn Val Gln Pro Leu Gly Arg Val Asp Leu *
150                690                695

152 <210> SEQ ID NO: 2
153 <211> LENGTH: 699
154 <212> TYPE: PRT
155 <213> ORGANISM: Bordetella pertussis
156 <400> SEQUENCE: 2
157      Met Thr Ser Lys Lys Ser Ile Arg Arg Leu Gln Arg Ala Val Ala Leu
158      1                5                10                15
159      Ala Thr Ser Arg Asn Asp Ile Val Leu Ala Val Leu Ile Val Ala Ile
160                20                25                30
161      Val Phe Met Met Ile Leu Pro Leu Pro Thr Thr Leu Val Asp Val Leu
162                35                40                45
163      Ile Gly Ala Asn Met Thr Leu Ser Ala Val Leu Leu Met Val Ala Met
164                50                55                60
165      Tyr Leu Pro Ser Pro Leu Ala Phe Ser Ser Phe Pro Ser Val Leu Leu
166      65                70                75                80
167      Val Thr Thr Leu Phe Arg Leu Gly Ile Ser Ile Ala Thr Thr Arg Leu
168                85                90                95
169      Ile Leu Leu Gln Gly Asp Ala Gly His Ile Ile Glu Thr Phe Gly Asn
170                100               105               110
171      Phe Val Val Gly Gly Asn Leu Ile Val Gly Leu Val Val Phe Leu Ile
172                115               120               125
173      Leu Thr Ile Val Gln Phe Val Val Ile Thr Lys Gly Ala Glu Arg Val
174                130               135               140
175      Ala Glu Val Ala Ala Arg Phe Ser Leu Asp Ala Met Pro Gly Lys Gln
176      145                150                155                160
177      Met Ser Ile Asp Ala Asp Leu Arg Ala Gly Thr Ile Asp Met Asp Glu
178                165                170                175
179      Ala Arg Arg Arg Arg Arg Thr Val Glu Lys Glu Ser Gln Leu Tyr Gly
180                180                185                190
181      Ala Met Asp Gly Ala Met Lys Phe Val Lys Gly Asp Ala Ile Ala Gly
182                195                200                205
183      Leu Ile Ile Val Ala Val Asn Leu Leu Gly Gly Met Leu Val Gly Val
184                210               215               220
185      Leu Gln Arg Gly Leu Ser Ala Gly Glu Ala Val Gln Thr Tyr Ala Ile
186      225                230                235                240
187      Leu Thr Ile Gly Asp Gly Leu Ile Ala Gln Ile Pro Ala Leu Phe Ile
188                245                250                255
189      Ala Ile Cys Ala Gly Ile Ile Val Thr Arg Val Gln Thr Gly Asp Gly
190                260                265                270
191      Pro Ser Asn Val Gly Thr Asp Ile Gly Ala Gln Val Leu Ala Gln Pro
192                275                280                285

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```

193 Arg Ala Leu Val Ile Ala Gly Ala Ile Ser Ala Gly Leu Gly Leu Ile
194      290      295      300
195 Pro Gly Met Pro Thr Leu Val Phe Phe Ala Leu Ala Ala Val Gly
196      305      310      315      320
197 Thr Ile Gly Phe Val Leu Leu Arg Ala Ser Gln Arg Pro Pro Glu Gly
198      325      330      335
199 Ala Glu Pro Ala Leu Ala Gly Met ala Ala Asp Gly Gln Pro Arg Thr
200      340      345      350
201 Arg Ala Pro Ala Asp Gly Gln Ala Glu Phe Ala Pro Thr Val Pro Leu
202      355      360      365
203 Ile Ile Asp Val Ala Ala Arg Leu Gln Pro Arg Phe Glu Pro Ala Thr
204      370      375      380
205 Leu Thr Asp Asp Leu Leu Gln Ile Arg Arg Ala Leu Tyr Phe Asp Leu
206      385      390      395      400
207 Gly Val Pro Phe Pro Gly Ile Gln Leu Arg Phe Thr Glu Ala Leu Ala
208      405      410      415
209 Ala Asn Thr Tyr Thr Ile Val Leu Ser Glu Ile Pro Val Ala Gln Gly
210      420      425      430
211 Met Leu Arg Asp Asp Ala Val Leu Val Arg Asp Thr Glu Gln Asn Leu
212      435      440      445
213 Gln Ala Leu Arg Ile Ala Tyr Glu Thr Gly Ala Ala Phe Leu Pro Asp
214      450      455      460
215 Thr Pro Thr Ile Trp Val Ala Ala Ser Leu Thr Gly Ala Leu Arg Asp
216      465      470      475      480
217 Ala Gly Ile Pro Tyr Leu Gly Ile Ser Gln Ile Leu Thr Trp His Leu
218      485      490      495
219 Ala Tyr Val Leu Lys Lys Tyr Ser Ala Asp Phe Ile Gly Ile Gln Glu
220      500      505      510
221 Thr Arg Phe Leu Leu Ser Ala Met Glu Glu Arg Phe Pro Asp Leu Val
222      515      520      525
223 Lys Glu Cys Leu Arg Val Met Pro Val Gln Lys Ile Ala Glu Ile Leu
224      530      535      540
225 Gln Arg Leu Val Ser Glu Glu Val Ser Ile Arg Asn Leu Arg Ala Val
226      545      550      555      560
227 Leu Glu Ala Leu Val Glu Trp Gly Gln Lys Glu Lys Asp Thr Val Leu
228      565      570      575
229 Leu Thr Glu Tyr Val Arg Ile Ala Leu Lys Arg Tyr Ile Ser His Lys
230      580      585      590
231 Tyr Thr Ser Gly His Asn Ile Leu Pro Ala Tyr Leu Leu Ala Pro Lys
232      595      600      605
233 Val Glu Glu Thr Val Arg Ala Ala Ile Arg Gln Thr Ala Ala Gly Ser
234      610      615      620
235 Tyr Leu Ala Leu Asp Pro Asp Thr Thr Arg Arg Leu Val Glu His Ile
236      625      630      635      640
237 Arg Gln Cys Val Gly Asp Leu Ala Ala Gly Ala Ser Arg Pro Val Leu
238      645      650      655
239 Leu Thr Ser Met Asp Ile Arg Arg Tyr Thr Arg Lys Met Ile Glu Ala
240      660      665      670
241 Asp Leu Tyr Ala Leu Pro Val Leu Ser Tyr Gln Glu Leu Thr Pro Glu

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**VERIFICATION SUMMARY**

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